



A well-maintained channel passes floodwater and doesn't erode its banks.



This is an example of well positioned plantings. Trees near the top of the bank, dense shrubs on the bank, grasses and wetlands plants retained in the floodway.

INTRODUCTION

Whilst maintaining riparian areas it is important to ensure that free passage of water through channels and floodplains is maintained. This information sheet discusses how to ensure that plantings and fences don't obstruct flood flow or erode streambanks, causing problems on the farm or for neighbours.

FENCE PLACEMENT

Fences should be positioned above flood level where-ever possible. Where there is no option but to cross a floodplain or fence a bank to the water's edge - or where a fence has to extend into a shallow channel to stop stock movement - try one of the flood-proof designs described in the Council's information sheet *Riparian fencing options and costs*.

STOCK CROSSINGS

When retiring a bank stock still need to be moved from the paddock on one side to the paddock on the other. Stock crossings need to be well-designed, so that repeated, concentrated trampling doesn't damage the channel bed and banks. A good stock crossing also minimises the risk of animals escaping up- or down-channel. *Riparian fencing options and costs* contains some suggestions about design.

WEED CONTROL

Where banks are retired and planted, it's important to ensure that flood flow isn't obstructed by a dense tangle of blackberry or similar weed. Refer to *Maintaining riparian vegetation* for information about weed control methods that will kill the weeds without killing the new plantings.

CORRECT PLACEMENT OF PLANTINGS

Vegetation, if planted in the wrong place, will deflect current against some other point, usually on the opposite bank, causing it to scour.

This problem can largely be avoided by:

- Planting trees at the top of the bank
- Planting shrubs on the lower part of the bank

- Avoiding placement of trees or shrubs in the floodway.

Refer to the *Establishing riparian vegetation* information sheet for more details about what can be planted where.

ADVERSE SPECIES

Above all, avoid using any water-tolerant plant that cracks, suckers or seeds prolifically. It almost certainly will invade the channel. Crack willow (*Salix fragilis*) is the best-known example, but there are many others that should be treated with caution:

- Weeping willow (cracks)
- Silver poplar (suckers)
- All non-sterile tree and shrub willows (seed disperses downstream)
- Grey alder, black wattle, Chinese elm, ash, walnut (seed disperses downstream)
- Buddleia, blackberry, gorse (invades the floodway)

SILVICULTURE

Any tree planted on a streambank eventually grows old, and may collapse into the channel. Risk of this happening can be reduced by silviculture:

- Form-prune young trees, so that ground cover isn't suppressed by lower branches
- Fell and replace trees that are over-mature, at risk of being toppled by wind or killed by rot and disease
- Select a single leader to avoid dense, spindly regrowth, from the stumps of species that sucker or coppice.

If planting in a riparian area for timber production, trees need to be clearly separated from the stream, so that at harvest, there is no chance of its channel being disturbed by logging machinery, or blocked by slash.

Remember that stream alignments can and do change significantly in the course of thirty years. Careful consideration of potential channel migration is necessary prior to deciding where to plant trees for harvest.

For further advice or information about sustainable land management contact:

TARANAKI REGIONAL COUNCIL

Land Management Section
Private bag 713, Stratford
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CHANNEL CLEARANCE

Existing trees that have already fallen into the channel - or are growing there, such as tree willows - have to be removed.

Remember to poison the ends of cut branches as well as stumps immediately after felling, so that there isn't any regrowth. At the same time, it is a good idea to drag out any debris in the stream bed, as logs and brush lodge against it during floods, and impede passage of floodwater.

On large streams, logs removed from the bed can be strategically placed against banks at the water's edge, to protect them from scour. If doing this, take care when positioning each log, so that it doesn't deflect current against the opposite bank. They need to be well-anchored with wire cable tied to fencing standards or railway irons. On small streams, logs can be positioned across-channel at low-water level to trap sediment, creating natural bars and pools along the channel. These help protect against bed scour and bank collapse, but the logs must be carefully placed so that they do not obstruct flood flows.

works from 1 May to 31 October, unless the Taranaki Fish and Game Council approves their specific location.



If not maintained, a retired stream can become completely blocked by timber and debris.

WHERE TO GET MORE ADVICE

Taranaki Regional Council provides a free advisory service for landowners wishing to maintain channels and floodplains. This service includes site visits to inspect problems, advice about how to fix them, and assistance with remedying any problem that's severe enough to cause flooding or erosion.



Old trees need silviculture or replacement before they get to the stage where they are a menace.

EARTHWORKS IN CHANNELS AND FLOODPLAINS

Remember to contact the Regional Council if intending to undertake any channel maintenance that entails machinery disturbing the banks or the bed of a stream or river. The Regional Freshwater Plan requires a resource consent for any work that involves excavation or diversion. To protect trout habitat, the Regional Freshwater Plan also excludes instream

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